

A, F SERIES Single and Dual Output 5 Watt DC/DC Converters

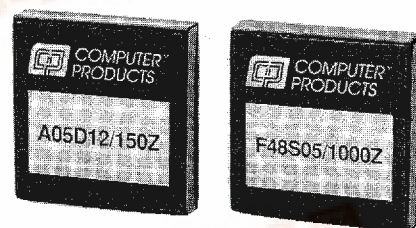
- Low Noise
- Linear Regulation
- Low Profile 0.38 Inch High
- Six-Sided Shield
- Pi Input Filter
- Short Circuit Protected
- High Isolation
- Meets VDE0871 Level B
- 2 Year Warranty
- For new designs, please see the AFC or NFC Series

The A series (dual output) and F series (single output) are precision 5 watt DC/DC converters intended for applications where excellent regulation, very low output noise and high input-output isolation are important. The input Pi filter significantly lowers input-reflected noise current. Adding external input filtering, if necessary, is made easier by the fixed-frequency design.

The six-sided copper case minimizes radiated noise while reducing

external noise susceptibility. It also enhances heat dissipation. The internal power components are conservatively derated and thermally connected to the case to optimize reliability. This permits operation from -25°C to $+71^{\circ}\text{C}$ without derating or additional heatsinking.

These converters are offered in an encapsulated $2" \times 2"$ industry-standard package with a low 0.38" height.



SPECIFICATIONS

All specifications typical at nominal line, full load, and 25°C unless otherwise noted.

OUTPUT SPECIFICATIONS		
Voltage Accuracy	A (+ output), F Series	$\pm 1\%$ max.
Voltage Balance	A Series, — output	$\pm 1\%$ max.
Ripple and Noise	20 MHz Bandwidth	1 mV RMS max. 40 mV P-P max.
Temperature Coefficient	A Series F Series	$\pm 0.01\%/^{\circ}\text{C}$ $\pm 0.02\%/^{\circ}\text{C}$
Voltage Stability	A, 24 hr. F, 24 hr.	$\pm 0.05\%$ $\pm 0.02\%$
Transient Response Time	A Series, NL-FL, settling to within $\pm 0.1\%$ F Series, NL-FL, settling to within $\pm 0.5\%$ A, F, 50% to FL	50 μs max. 75 μs max. 25 μs max.
Short Circuit Protection	A Series — current limit F Series — current limit	150% I _{out} 160% I _{out}
Overvoltage Protection	F Series, 5V output models	6.8V

Input Voltage Ranges ⁽¹⁾		
Nominal Input	A Series	F Series
5V	4.75 - 5.25V	4.75 - 5.5V
12V	11 - 13V	10.8 - 14V
24V	20 - 28V	
48V	42 - 56V	42 - 56V

INPUT SPECIFICATIONS		
Input Voltage Range	See Table	
Input Filter	Pi Filter	
ENVIRONMENTAL SPECIFICATIONS		
Temperature Range	Operating ambient Operating case Derating Non-operating	−21°C to +71°C +95°C none −40°C to +100°C
Cooling	Natural convection	
GENERAL SPECIFICATIONS		
Isolation Voltage	500VDC, min.	
Isolation Resistance	10 ⁹ ohms, min.	
Switching Frequency	20 kHz	
EMI/RFI	Six-sided continuous metal case meets VDE0871 Limit B	
MTBF ⁽²⁾	680,000 hours	
Weight	3.5 oz. (98 grams)	
Case Material	Black-coated copper with non-conductive base	
Mating Sockets	MS-038-0 or MS-Z	

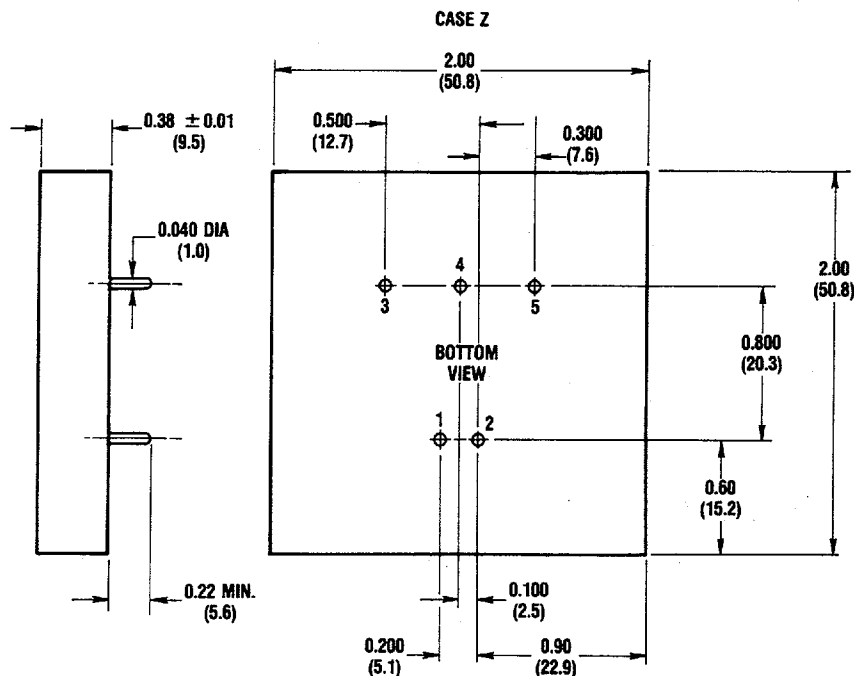
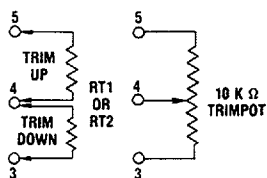
Input Voltage	Output Voltage	Output Current	Input Current		% EFF	Regulation		Case	Model Number
			No Load	Full Load		Line ⁽³⁾ (Max)	Load ⁽⁴⁾ (Max)		
5 VDC	5 VDC	1000 mA	130 mA	1500 mA	67	±0.1%	±0.1%	Z	F05S05/1000Z
5 VDC	12 VDC	500 mA	155 mA	1800 mA	66	±0.1%	±0.1%	Z	F05S12/500Z
5 VDC	15 VDC	350 mA	157 mA	1520 mA	69	±0.1%	±0.1%	Z	F05S15/350Z
12 VDC	5 VDC	1000 mA	40 mA	635 mA	66	±0.1%	±0.1%	Z	F12S05/1000Z
12 VDC	12 VDC	500 mA	40 mA	750 mA	67	±0.1%	±0.1%	Z	F12S12/500Z
12 VDC	15 VDC	350 mA	45 mA	645 mA	68	±0.1%	±0.1%	Z	F12S15/350Z
48 VDC	5 VDC	1000 mA	15 mA	165 mA	63	±0.1%	±0.1%	Z	F48S05/1000Z
48 VDC	6 VDC	1000 mA	15 mA	200 mA	63	±0.1%	±0.1%	Z	F48S06/1000Z
48 VDC	12 VDC	500 mA	15 mA	205 mA	61	±0.1%	±0.1%	Z	F48S12/500Z
48 VDC	15 VDC	350 mA	15 mA	180 mA	61	±0.1%	±0.1%	Z	F48S15/350Z
5 VDC	±12 VDC	±150 mA	150 mA	1150 mA	63	±0.07%	±0.07%	Z	A05D12/150Z
5 VDC	±15 VDC	±150 mA	150 mA	1350 mA	67	±0.07%	±0.07%	Z	A05D15/150Z
12 VDC	±12 VDC	±150 mA	50 mA	460 mA	65	±0.07%	±0.07%	Z	A12D12/150Z
12 VDC	±15 VDC	±150 mA	50 mA	540 mA	69	±0.07%	±0.07%	Z	A12D15/150Z
24 VDC	±12 VDC	±150 mA	25 mA	260 mA	58	±0.07%	±0.07%	Z	A24D12/150Z
24 VDC	±15 VDC	±150 mA	25 mA	290 mA	65	±0.07%	±0.07%	Z	A24D15/150Z
48 VDC	±12 VDC	±150 mA	20 mA	125 mA	60	±0.07%	±0.07%	Z	A48D12/150Z
48 VDC	±15 VDC	±150 mA	20 mA	135 mA	69	±0.07%	±0.07%	Z	A48D15/150Z

Pin Connections⁽⁵⁾

Pin	A Series	F Series
1	+ Input	+ Input
2	- Input	- Input
3	+ Output	+ Output
4	Common	No Pin
5	- Output	- Output

External Output Trimming

WF output may optionally be externally trimmed ($\pm 10\%$) with a fixed resistor or an external trimpot as shown.



ALL DIMENSIONS IN INCHES (mm)

Tolerance .xx = ± 0.04
.xxx = ± 0.005

Notes:

- (1) The input voltage range can be increased to $\pm 10\%$ under reduced loads. Contact the factory for details.
- (2) MTFB figures are based on actual product performance. Contact the factory for details.
- (3) Measured from high line to low line.
- (4) Measured from full load to no load.
- (5) For the A series, the case is connected to output common on 5V, 12V and 24V input versions. The case is connected to + input on 48V input versions.
- (6) Fixed frequency design makes input filtering easier and improves noise performance.